

CLAIMS

1. A device for mixing two fluids and distributing said mixture, characterized in that it comprises a chamber (110) supplied with a first fluid, said chamber being filled with said first fluid, and a series of tubes or conduits (108) traversing said chamber in a substantially vertical direction and supplied with a second fluid, said tubes being perforated by lateral orifices distributed over a plurality of levels allowing said tubes to communicate with said chamber, said tubes being characterized by a diameter d_c in the range 3 to 100 mm for a surface velocity of the first fluid in the range 0.1 to 100 cm/s, said tubes also being characterized in that the distance between the orifices located at the lowest level with respect to the direction of flow of the fluid or fluid mixture at the tube outlet is more than 50 mm.
2. A device according to claim 1, in which the tubes (108) extend below the lower level of the chamber (110) by a distance h_t , distance h_t preferably being in the range 10 to 50 mm.
3. A device according to claim 1 or claim 2, in which the distance between the level of the tube (108) outlet and the upper surface of the bed located below the device is preferably in the range 0 to 50 mm.
4. A device according to any one of claims 1 to 3, in which the density of the tubes or conduits is more than 80 conduits per m^2 .
5. A device according to any one of claims 1 to 4, characterized in that said device is located upstream of a catalytic bed or at the reactor head.
6. A device according to claim 1, in which the first fluid is essentially liquid and the second fluid is essentially gaseous.
7. A device according to claim 1, in which the first fluid is essentially liquid and the second fluid is essentially a second liquid that is not miscible with the first liquid.
8. A device according to any one of the preceding claims, characterized in that said device is located upstream of a granular solid.

9. A device according to any one of the preceding claims, characterized in that said chamber is supplied at at least one point (102) by injecting the first fluid laterally with respect to said device.

10. A device according to any one of claims 1 to 9, characterized in that said device is located downstream of a bed of granular solid.

11. A reactor comprising at least one device according to any one of claims 1 to 10, to mix and distribute two fluids, comprising at least one bed of granular solids downstream of said device, the first fluid being introduced directly into the chamber (110) and the second fluid being introduced upstream of said device.

12. A reactor according to claim 11, characterized in that it comprises a buffer drum located upstream of the reactor head and outside the reactor, connected with the device via lines (12, 13) to allow material exchange between the liquid phase and the gas phase, said lines allowing separate injection into the mixing device of an essentially liquid phase containing dissolved gas and of an essentially gaseous phase containing liquid respectively, said essentially liquid and essential gaseous phases resulting from prior contact of the liquid and gas phases in said buffer drum.

13. A reactor according to claim 11 or claim 12, in which the two fluids circulate in a co-current dropper mode through said bed or beds of granular solids.

14. Use of a device and/or a reactor as described in any one of preceding claims, in hydrodesulphurisation, selective hydrogenation or hydrodenitrogenation processes.